

**REMARKS**

Claims 1, 3-11, 13, and 24-26 are currently pending in this application. By way of the foregoing amendment, claim 1 has been amended to incorporate the limitations of claims 2, 22, and 23, claims 2, 12, 14-16, 22, and 23 have been cancelled, and claims 3-11, 13, and 24-26 have been amended, without prejudice, to recite proper dependency. Applicants respectfully submit that no new matter has been added by way of these amendments.

**Rejections Under 35 U.S.C. § 103(a)**

Claims 1-16 and 22-26 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,632,692 (Lebesgue et al.) in view of U.S. Patent No. 4,259,147 (Gordy), and further in view of GB 2,150,552 (GB '552). With respect to this rejection, the Office Action states, in pertinent part:

Lebesgue et al disclose a process including the steps of providing a biopulp of a non-woody fiber plant, and filtrating the biopulp to form liquid effluent. ... The difference between the process disclosed by Lebesgue et al, and that recited in applicants' claims is that Lebesgue et al do not disclose that liquid effluent 28 should be formulated for preparing a plant nutrition. Gordy discloses a pulping process, and teaches at col. 12, lines 38-65 that the liquid by-product can be used to produce a fertilizer. British 2,150,552 discloses soaking seaweed and heating it under pressure to obtain a liquid fertilizer. It would be obvious from Gordy in view of British 1,150,552 [sic.] to formulate a plant nutrition from liquid effluent 28 in the process of Lebesgue et al, since Gordy teaches that a liquid fertilizer should be formulated from the liquid from a pulping process, and British 2,150,551 discloses that seaweed contains the principle plant nutrients as well as trace element.

Office Action at pg. 2. Applicants respectfully traverse this rejection for the reasons set forth in detail below.

Independent claim 1, as amended, is directed to a method for formulating a plant nutrition, comprising the steps of:

- (a) providing a culture solution with a culture medium, a non-woody fiber plant and a suspension of a microorganism;
- (b) fermenting said culture solution for preparing a biopulp;
- (c) filtrating said biopulp for preparing a filtrate; and
- (d) formulating said filtrate for preparing said plant nutrition by adding an additive, wherein said additive is one selected from a group consisting of a polymer, a nitrogen source, an alcohol, a Hoagland's solution and a mixture thereof.

The method recited in independent claim 1 uses a fermentation step to digest the non-woody fiber plant and to generate a biopulp for paper manufacturing (according to the background of the invention) and the by-product (*i.e.*, the filtrate). The filtrate recited in claim 1 is a useful material which can be formulated for use as nutrition for plant cultivation.

In contrast, Lebesgue et al. teaches a method and device for associating aerobic and anaerobic fertilizers to process organic waste and produce a compost, biogas, and liquid waste, simultaneously. The organic waste includes both woody and non-woody wastes. Thus, the "liquid effluent" in Lebesgue et al. is only waste which is processed to be more environmentally friendly. This is distinguishable from the filtrate recited in independent claim 1, which is useful as a plant nutrient.

Gordy discloses a method which uses an inorganic chemical treatment, such as ammonia, ammonia hydroxide, or sulfite, to digest the lignin of a woody plant and obtain a woody fiber pulp. This process is distinguishable from independent claim 1 of the present invention which uses microorganisms to digest non-woody fiber plants and generate a biopulp. Furthermore, the additives disclosed in Gordy are pure mineral ions; whereas the additives disclosed in claim 1 include organic and the inorganic materials.

GB '552 discloses a method used to extract seaweed extract from artificially dried seaweed by soaking and heating the seaweed. The method disclosed in GB '552 does not use any step for preparing a plant nutrition by adding an additive as recited in independent claim 1. In addition, claim 24 of the present invention recites that the additive of the present application can be seaweed powder (of which there is no need to extract the seaweed), which is distinguishable from the seaweed extract recited in GB '552.

With respect to the combination of Lebesgue et al. and Gordy, Applicants respectfully submit that it would not be possible to transfer the liquid waste accessible for the environment as described in Lebesgue et al. into nutrition by adding the mineral ions described in Gordy.

The method of the present invention also has the below advantages, which are neither taught nor suggested in the prior art:

- (1) preventing pollution generated from the paper manufacturing process;  
and
- (2) transforming the pollutant by-product of paper manufacturing from  
pollution into a valuable nutrition for the plant cultivation.

Based on the foregoing, one of ordinary skill in the art would understand that Lesbesgue et al., Gordy, and GB '552, taken alone or in combination, are distinguishable from independent claim 1 of the present invention. Claims 3-11, 13, and 24-26 depend from claim 1, which Applicants believe are allowable over the cited prior art of record for the same reasons provided above.

Based on the arguments presented above, withdrawal of the obviousness rejection of claims 1, 3-11, 13, and 24-26 is respectfully requested.

**Rejections Under 35 U.S.C. § 112, second paragraph**

Claims 1-16 and 22-26 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Office Action states that it is indefinite as to whether the steps of: (1) “filtrating said biopulp for preparing filtrate,” (2) “formulating said filtrate for preparing said plant nutrition,” and (3) “fermenting said culture solution for preparing said biopulp,” would require that a filtrate, plant neutrino or biopulp, respectively, is merely an intended use of the biopulp, filtrate or culture solution, respectively, but would not actually have to be prepared. The Office Action further states that it is indefinite as to what constitutes “Hoagland’s solution.”

Independent claim 1, as amended, now recites a method for formulating a plant nutrition, comprising the steps of:

- (a) providing a culture solution with a culture medium, a non-woody fiber plant and a suspension of a microorganism;
- (b) fermenting said culture solution for preparing a biopulp;
- (c) filtrating said biopulp for preparing a filtrate; and
- (d) formulating said filtrate for preparing said plant nutrition by adding an additive, wherein said additive is one selected from a group consisting of a polymer, a nitrogen source, an alcohol, a Hoagland's solution and a mixture thereof.

Applicants respectfully submit that the amendments to independent claim 1 should resolve the indefiniteness issues raised by the Examiner.

Furthermore, regarding the indefinite issue regarding "Hoagland's solution," Applicants respectfully submit that "Hoagland's solution" is a commonly used plant nutrition formula since 1950, which is used in many plant growth related studies. Support can be found in the following references:

1. Hoagland, D.R. and Aron, D.I., Calif. Agric. Exp. Cric., 347 (1950); and
2. Huang, J. W., "Integrated Management of Vegetable Seedling Pests with a Formulated Plant Nutrition," Plant Port. Bull., 34:54-63 (1992).

The formula of the "Hoagland's solution" is as follows: each liter of the solution includes 1 molar  $\text{Ca}(\text{NO}_3)_2$  5mL + 1 molar  $\text{KNO}_3$  5mL + 1 molar  $\text{MgSO}_4$  2mL + 1 molar  $\text{KH}_2\text{PO}_4$  1mL.

Based on the foregoing, Applicants respectfully submit that one of ordinary skill in the art would easily understand the meaning of "Hoagland's solution."

Withdrawal of the indefiniteness rejections of pending claims 1, 3-11, 13, and 24-26 is respectfully requested.

**Conclusion**

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing remarks, Applicants respectfully submit that the present application, including claims 1, 3-11, 13, and 24-26, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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